Computer Program Listing Appendix A

1   **Text string resources used for expert system:**
2   Project/Fabric Strings:
3   IDS_PROJECT   "No Project type selected."
4   IDS_COTTON   "Ordinary cotton, polyester, or blends embroider easily."
5   **IDS_COTTON/POLYESTER   "Ordinary cotton, polyester, or blends embroider easily. If you are working with a heavy weight, also**
6   **check out the instruction for Canvas/Denim. Since this category covers a broad range of fabrics, let's just add that you don't want to stretch**
7   **the fabric itself. this will cause compensation problems; your colors may not register well. Always try to get the fabric stable before hooping**
8   **it to eliminate this problem. When hooping, remember to make sure the fabric is 'drum tight'."**
9   IDS_CANVAS/DENIM   "Canvas and denim are generally easy to embroider and don't require a lot of stabilizer."
10   IDS_FLEECE   "Fleece is wonderful to embroider."
11   IDS_HATS   "Hats that are structured have stabilizer built-in. You may not have to use much stabilizer. The trouble is hooping; the hat
12   won't press into the frame easily. Alignment takes practice."
13   IDS_HATU   "Hats that are not structured require a little extra stabilization. They are less difficult to embroider than structured hats, but
14   can still be difficult."
15   IDS_HOSIERY   "Hosiery, stockings, etc., can be embroidered! This project is unusual because we actually stretch the material for a change!
16   Be very careful not to get other parts of the stocking caught! (It will probably happen the first time you try this type of
17   embroidery.)"
18   IDS_JERSEY   "Sweatshirt or jersey material can be difficult because of its tendency to shrink under the tension of embroidery. Due to
19   this, stabilization is very important. Do not attempt to pull the fabric tight in the hoop as this makes the problem very bad.
20   Just make sure that the stabilizer is hooped tightly, with the fabric adhered to it in a 'relaxed' state."
21   IDS_LACE   "Using lace designs is easy if you use a net or tulle as a foundation and some water-soluble stabilizer adhered well to it. You
22   may want to use self-adhesive water-soluble stabilizer. If you do, hoop the stabilizer, expose some of the sticky area, and
23   press the net onto it."
24   IDS_LEATHER   "Leather is fairly stable, but will stretch as you hoop it, therefore use an iron-on stabilizer. Split leather (garment-weight)
25   will fit into your hoop. Some leathers, however, are too heavy."
26   IDS_LINEN   "Linen sews out like most cotton or polyester fabrics, however it typically is a loose weave, so be careful not to stretch the
27   fabric, particularly on the bias."
28   IDS_LYCRA   "Lycra and other 'super-stretch' fabrics can be surprisingly easy. The difficulty lies in approximating the amount of stretch
29   the fabric will endure, because that's the amount of stretch that gets applied during the hooping process."
30   IDS_METAL   "Metal work or copper-punch is neat if you have a design digitized for it. Remember that every 'stitch' will leave a hole
31   when you are digitizing for this process. Since it is unlikely that your metal plate will be hoop-able, put some self-adhesive
32   stabilizer in the hoop and expose just enough stickiness to be sure that your metal won't shift. When you're done, release the
33   stabilizer from the hoop and have some solvent on hand to remove the adhesive that's left behind. If you do this carefully,
34   you'll have no bends in your metal!"
35   IDS_MICROTEX   "We've been seeing these high-density fabrics recently, and they have their uses, but you must first remember that they have
36   needle problems: Use a sharp (microtex) needle. In a pinch, a leather or denim needle will do."
37   IDS_QUILTED   "Quilted material is easy to embroider because in a sense it is already stable. One thing is important though; use a tear-away
38   stabilizer on the back so that the texture of the back won't snag as it embroiders."
39   IDS_SATIN   "Satin sews easily and is easily stabilized. The real difficulty is hooping this fabric (it can be very slippery). If your satin is
40   made of acetate, remember that water will leave spots, so we don't advise water-soluble stabilizer, and check your iron/press
41   before pressing."
42   IDS_PIQUE   "The typical sports shirt is made of a very breathable fabric known as a pique knit. This fabric also moves easily over the
43   body. What this also means is that it will pull-in after embroidering if you're not careful! Although it is not likely to stretch
44   much, pique knit wants to be treated as if it would. Relax the fabric as much as possible before stabilizing. You may also
45   want to lower your tension slightly. (Only slightly). If you have a bunch of shirts to do, practice on a sample first. "
46   IDS_SILK   "Silk is wonderful to embroider, but use a sharp (microtex) needle. Be careful not to stretch on the bias when tightening the
47   hoop."

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48	IDS_BATH	"Bath towels are very heavy, the result of which is that designs may lose some detail. However, towels are fairly easy to
49		embroider. You can even make a two-sided towel by matching your bobbin thread. Hoop a heavy water-soluble, then use
50		spray-adhesive to attach the towel to the stabilizer. "
51	IDS_HAND	"Hand towels are less heavy than bath towel, and the odds are that you can hoop it."
52	IDS_VELVET	"Velvet can be difficult, but yields wonderful results! Test to see if hooping your velvet will crush it. Also test for water-
53		marks, if you're inclined to use a water-soluble stabilizer on top to stabilize the nap of the fabric. "
54	IDS_VINYL	"Vinyl can be embroidered, but the catch is to use a good stabilizer underneath. The reason is that vinyl can be literally
55		cut-out if the density of the stitches is high. By using a good cut-away, or perhaps even another layer of fabric, you will
56		actually be sewing the vinyl onto the underlaying material, which helps a lot. Use a leather needle (jeans needle in a pinch)
57		to keep the holes as small as possible."
58	IDS_WOOL	"Wool is wonderful to embroider, but be careful if it has a pile or a stretch. Wools today are blended with many other
59		fabrics, so this will require some attention."

60 General Purpose String resources:

61	IDS_NEEDLEINFO	"\r\n\r\nThe following are my needle recommendations:\r\n"
62	IDS_HOOPINFO	"\r\n\r\nThe following are my hooping recommendations:\r\n"
63	IDS_STABILIZERINFO	"\r\n\r\nThe following are my stabilizer recommendations:\r\n"
64	IDS_STANDARD	"No stock answer"

65 Hooping resources:

66	IDS_NOHOOP	"Tightly hoop a self-adhesive tear-away stabilizer without removing the lining paper. Use a sharp knife or seam ripper to
67		score a large section of the lining paper and peel it away, exposing the sticky surface. Carefully press your fabric into
68		position. The more times you have to try to re-align it, the less sticky stuff you'll have."
69	IDS_NOHOOPSOLVY	"Add a layer of water-soluble stabilizer to the top of the fabric. You may want to use a little spray adhesive to hold it in
70		place."
71	IDS_NOHOOPBASTE	"With your design stabilized, embroider a basting stitch to help further anchor the stabilizer and fabric together. To create a
72		basting stitch, use the 'Auto Baste' feature in Designer's Gallery."

73 Stabilization resources:

74	IDS_NOWATER	"Be careful using water-soluble stabilizer on this fabric. Test thoroughly!"
75	IDS_NOHEAT	"If you use a stabilizer that dissolves with heat, be careful. If there is any nylon in your fabric, you must keep the heat low."
76	IDS_NORMAL	"Use a self-adhesive tear away stabilizer, cut big enough to fit the hoop."
77	IDS_IRONON	"Or, better yet, use an iron-on stabilizer."
78	IDS_CUTAWAY	"Or, better still, use a cut-away stabilizer."
79	**IDS_TEARAWAY**	**"Or, better still, use a tear-away stabilizer."**
80	IDS_HEAVYSOLVY	"Also add a layer of heavy water-soluble stabilizer to the top. (Some of these are now available as self-adhesive
81	too!)"	
82	IDS_CLEARMELT	"A handy alternative to water-soluble stabilizers are those that 'melt' away with heat."
83	IDS_MODSTRETCH	"Since you have increased the stretch setting, it is probable that you want to use a better-adhered stabilizer. Also, remember
84		to tighten the stabilizer, not the fabric, in the hoop."

85 Other String Resources:

86	IDS_RETURN	"\r\n"
87	IDS_MODSTRETCHNONE	"Hypothetical question: How does that exist without stretch?"
88	IDS_MODSTRETCHMETAL	"By the way, how does metal have stretch?"

89 Needle and Thread String resources:

90	NDL_LEATHER	"Needle: Leather, size 14"
91	NDL_JEANS	"Needle: Jeans, size 14"
92	NDL_EMBROIDERY	"Needle: Embroidery, size 14"
93	**NDL_EMBROIDERY**	**"Needle: Embroidery, size 11-12"**
94	NDL_EMBSMALL	"Needle: Embroidery, size 11"
95	NDL_STRETCH	"Needle: Stretch, size 12"
96	NDL_UNIBIG	"Needle: Universal, size 18"

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```
97    NDL_MICROTEX    "Needle: Microtex, size 11-12"
98    IDS_40WT            "Thread: 40wt."
99    IDS_35WT            "Thread: 35wt."
100   IDS_30WT      .     "Thread: 30wt."
101   IDS_50WT            "Thread: 50wt."
102   IDS_NOTHREAD       "No Thread"
103   Project String table indexes
104   IDS_SETTING     "No setting"
105   IDS_SCOTTON     "000"
106   IDS_SCANVAS     "340"
107   IDS_SFLEECE     "311"
108   IDS_SHATS       "340"
109   IDS_SHAT    .   "300"
110   IDS_SHOSIERY    "222"
111   IDS_SJERSEY     "011"
112   IDS_SLACE       "221"
113   IDS_SLEATHER    "351"
114   IDS_SLINEN      "110"
115   IDS_SLYCRA      "142"
116   IDS_SMETAL      "450"
117   IDS_SMICROTEX   "150"
118   IDS_SQUILTED    "400"
119   IDS_SSATIN      "100"
120   IDS_SPIQUE      "111"
121   IDS_SSILK       "140"
122   IDS_SBATH       "440"
123   IDS_SHAND       "340"
124   IDS_SVELVET     "341"
125   IDS_SVINYL      "450"
126   IDS_SWOOL       "340"
127   void CStabAdvDlg::Recommend()
128   {    // Start with a clean slate:
129          rec = "";
130       recList.RemoveAll();
131       // Display info on project.
132   Sample Code Functions for Analysis Software
133       recList.AddTail(RecList(IDS_COTTON + m_project));
134       // Create the MustBePriorTo list.
135       // Create the MustFollow list.
136       // Add the needle and thread recommendations
137       if(IsInList(IDS_COTTON)) { m_needle.LoadString(NDL_EMBROIDERY);    m_thread.LoadString(IDS_40WT); }
138       if(IsInList(IDS_CANVAS)) { m_needle.LoadString(NDL_JEANS);         m_thread.LoadString(IDS_35WT); }
139       if(IsInList(IDS_FLEECE)) { m_needle.LoadString(NDL_EMBROIDERY);    m_thread.LoadString(IDS_30WT); }
140       if(IsInList(IDS_HATS)) { m_needle.LoadString(NDL_EMBROIDERY);      m_thread.LoadString(IDS_40WT); }
141       if(IsInList(IDS_HATU)) { m_needle.LoadString(NDL_EMBROIDERY);      m_thread.LoadString(IDS_40WT); }
142       if(IsInList(IDS_HOSIERY)) { m_needle.LoadString(NDL_EMBSMALL);     m_thread.LoadString(IDS_40WT); }
143       if(IsInList(IDS_JERSEY)) { m_needle.LoadString(NDL_STRETCH);       m_thread.LoadString(IDS_40WT); }
144       if(IsInList(IDS_LACE)) { m_needle.LoadString(NDL_EMBROIDERY);      m_thread.LoadString(IDS_35WT); }
145       if(IsInList(IDS_LEATHER)) { m_needle.LoadString(NDL_LEATHER);      m_thread.LoadString(IDS_30WT); }
```

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```
146   if(IsInList(IDS_LINEN)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_40WT); }
147   if(IsInList(IDS_LYCRA)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_40WT); }
148   if(IsInList(IDS_METAL)) { m_needle.LoadString(NDL_UNIBIG);            m_thread.LoadString(IDS_NOTHREAD); }
149   if(IsInList(IDS_MICROTEX)) { m_needle.LoadString(NDL_MICROTEX);       m_thread.LoadString(IDS_50WT); }
150   if(IsInList(IDS_QUILTED)) { m_needle.LoadString(NDL_EMBROIDERY);      m_thread.LoadString(IDS_40WT); }
151   if(IsInList(IDS_SATIN)) { m_needle.LoadString(NDL_MICROTEX);          m_thread.LoadString(IDS_40WT); }
152   if(IsInList(IDS_PIQUE)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_40WT); }
153   if(IsInList(IDS_SILK)) { m_needle.LoadString(NDL_MICROTEX);           m_thread.LoadString(IDS_50WT); }
154   if(IsInList(IDS_BATH)) { m_needle.LoadString(NDL_JEANS);              m_thread.LoadString(IDS_30WT); }
155   if(IsInList(IDS_HAND)) { m_needle.LoadString(NDL_EMBROIDERY);         m_thread.LoadString(IDS_35WT); }
156   if(IsInList(IDS_VELVET)) { m_needle.LoadString(NDL_EMBROIDERY);       m_thread.LoadString(IDS_40WT); }
157   if(IsInList(IDS_VINYL)) { m_needle.LoadString(NDL_LEATHER);           m_thread.LoadString(IDS_30WT); }
158   if(IsInList(IDS_WOOL)) { m_needle.LoadString(NDL_EMBROIDERY);         m_thread.LoadString(IDS_35WT); }
159   // Create the stabilzer advise
160   if(!recList.IsEmpty())
161   {                      //recList.AddTail(RecList(IDS_STABILIZERINFO));
162                          if(IsInList(IDS_COTTON)) recList.AddTail(RecList(IDS_NORMAL));
163                          if(IsInList(IDS_COTTON/POLYESTER)) recList.AddTail(RecList(IDS_NORMAL));
164                          if(IsInList(IDS_CANVAS)) recList.AddTail(RecList(IDS_NORMAL));
165                          if(IsInList(IDS_FLEECE)) recList.AddTail(RecList(IDS_NORMAL));
166                          if(IsInList(IDS_HATS)) recList.AddTail(RecList(IDS_NOHOOP));
167                          if(IsInList(IDS_HATU)) recList.AddTail(RecList(IDS_NOHOOP));
168                          if(IsInList(IDS_HOSIERY)) recList.AddTail(RecList(IDS_NOHOOP));
169                          if(IsInList(IDS_JERSEY))
170                          {    recList.AddTail(RecList(IDS_NORMAL));
171                               recList.AddTail(RecList(IDS_CUTAWAY));            }
172                          //if(IsInList(IDS_LACE)) recList.AddTail(RecList(IDS_NORMAL));
173                          if(IsInList(IDS_LEATHER)) recList.AddTail(RecList(IDS_NOHOOP));
174                          if(IsInList(IDS_LINEN))
175                          {    recList.AddTail(RecList(IDS_NORMAL));
176                               recList.AddTail(RecList(IDS_IRONON));              }
177                          if(IsInList(IDS_LYCRA))
178                          {    recList.AddTail(RecList(IDS_NORMAL));
179                               recList.AddTail(RecList(IDS_NOHOOPBASTE));
180                               recList.AddTail(RecList(IDS_NOHEAT));             }
181                          //if(IsInList(IDS_METAL)) recList.AddTail(RecList(IDS_NORMAL));
182                          if(IsInList(IDS_MICROTEX)) recList.AddTail(RecList(IDS_NORMAL));
183                          if(IsInList(IDS_QUILTED)) recList.AddTail(RecList(IDS_NORMAL));
184                          if(IsInList(IDS_SATIN))
185                          {    recList.AddTail(RecList(IDS_CLEARMELT));
186                               recList.AddTail(RecList(IDS_NORMAL));
187                               recList.AddTail(RecList(IDS_IRONON));                }
188                          if(IsInList(IDS_PIQUE))
189                          {    recList.AddTail(RecList(IDS_NORMAL));
190                               recList.AddTail(RecList(IDS_CUTAWAY));
191                               recList.AddTail(RecList(IDS_HEAVYSOLVY));
192                               recList.AddTail(RecList(IDS_NOHOOPBASTE));     }
193                          if(IsInList(IDS_SILK)) recList.AddTail(RecList(IDS_NORMAL));
194                          if(IsInList(IDS_BATH))
```

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```
195                    {    recList.AddTail(RecList(IDS_NOHOOPSOLVY));
196                         recList.AddTail(RecList(IDS_NOHOOPBASTE));    }
197               if(IsInList(IDS_HAND))
198                    {    recList.AddTail(RecList(IDS_NORMAL));
199                         recList.AddTail(RecList(IDS_NOHOOPSOLVY));
200                         recList.AddTail(RecList(IDS_NOHOOPBASTE));    }
201               if(IsInList(IDS_VELVET))
202                    {    recList.AddTail(RecList(IDS_CLEARMELT));
203                         recList.AddTail(RecList(IDS_NOHEAT));
204                         recList.AddTail(RecList(IDS_NORMAL));                    }
205               //if(IsInList(IDS_VINYL)) recList.AddTail(RecList(IDS_NORMAL));
206               if(IsInList(IDS_WOOL))
207                    {    recList.AddTail(RecList(IDS_NORMAL));
208                         recList.AddTail(RecList(IDS_NOHOOPSOLVY));    }
209          }               // if(!recList.IsEmpty())
210     // Create the stabilizer MustBePriorTo list.
211     // Create the stabilizer MustFollow list.
212  Sample Code Function for Operator Parameter Selection
213     // Use rules to modify based on users changing settings.
214     if(!IsInList(IDS_METAL) && (tStretch < m_stretch)) // Stretch increased
215          {               recList.AddTail(RecList(IDS_RETURN));
216                         recList.AddTail(RecList(IDS_RETURN));
217                         recList.AddTail(RecList(IDS_MODSTRETCH));
218          }
219     if(IsInList(IDS_COTTON))
220          {               if(m_thickness > 2) m_needle.LoadString(NDL_JEANS); }
221     if(IsInList(IDS_COTTON/POLYESTER))
222          {               if(m_thickness > 2) m_needle.LoadString(NDL_JEANS);    }
223     if(IsInList(IDS_CANVAS))
224          {               if(m_thickness < 3) m_needle.LoadString(NDL_EMBROIDERY);    }
225     if(IsInList(IDS_FLEECE))
226          { }
227     if(IsInList(IDS_HATS))
228          { }
229     if(IsInList(IDS_HATU))
230          { }
231     if(IsInList(IDS_HOSIERY))
232          {               if(!m_stretch)
233                         {    recList.AddTail(RecList(IDS_RETURN));
234                              recList.AddTail(RecList(IDS_RETURN));
235                              recList.AddTail(RecList(IDS_MODSTRETCHNONE));
236                         }
237          }
238     if(IsInList(IDS_JERSEY))
239          { }
240     if(IsInList(IDS_LACE))
241          { }
242     if(IsInList(IDS_LEATHER))
243          { }
```

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```
244   if(IsInList(IDS_LINEN))
245   { }
246   if(IsInList(IDS_LYCRA))
247   {                  if(!m_stretch)
248                         {    recList.AddTail(RecList(IDS_RETURN));
249                              recList.AddTail(RecList(IDS_RETURN));
250                              recList.AddTail(RecList(IDS_MODSTRETCHNONE));
251                         }
252   }
253   if(IsInList(IDS_METAL))
254   {                  if(m_stretch)
255                         {    recList.AddTail(RecList(IDS_RETURN));
256                              recList.AddTail(RecList(IDS_RETURN));
257                              recList.AddTail(RecList(IDS_MODSTRETCHMETAL));
258                         }
259   }
260   if(IsInList(IDS_MICROTEX))
261   { }
262   if(IsInList(IDS_QUILTED))
263   { }
264   if(IsInList(IDS_SATIN))
265   { }
266   if(IsInList(IDS_PIQUE))
267   { }
268   if(IsInList(IDS_SILK))
269   { }
270   if(IsInList(IDS_BATH))
271   { }
272   if(IsInList(IDS_HAND))
273   { }
274   if(IsInList(IDS_VELVET))
275   { }
276   if(IsInList(IDS_VINYL))
277   { }
278   if(IsInList(IDS_WOOL))
279   { }
280   // Establish thread
281   CString temp;
282   float thread = 4;
283   temp.LoadString(IDS_35WT);
284   if(m_thread == temp) thread = 3.5;
285   temp.LoadString(IDS_30WT);
286   if(m_thread == temp) thread = 3;
287   temp.LoadString(IDS_50WT);
288   if(m_thread == temp) thread = 5;
289   display.thread = thread;
290   // Now analyze the density
291   CString analysis;
292   BEmbroideryFile ft;
```

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```
293    ft = display.file;
294    int w = (int)(((float)abs(ft.maxX - ft.minX)) * thread/11);
295    w = ((w + 1) / 2) * 2;    // DWORD align width for storage.
296    int h = (int)(((float)abs(ft.maxY - ft.minY)) * thread/11);
297    ft.width = w;
298    ft.height = h;
299    ft.RenderDensityBitmap();
300    ft.AnalyzeDensity();
301    POSITION pos = ft.densityColorList.GetHeadPosition();
302    CString a = "I have analyzed the density of your design.\r\n", b;
303    int count = 1;
304    float pct = 0;
305    while(pos)
306    {              BEmbroideryColor col = ft.densityColorList.GetNext(pos);
307                   if(ft.densityMapSum)
308                        pct = ((float)col.stitches) / ((float)ft.densityMapSum);
309                   b.Format("Density: %i : %6.2f\r\n", count, pct*100);
310                   a += b;
311                   count++;
312    }
313    analysis = a;
314    rec = analysis;
315    rec += "\r\n\r\n";
316    // Place the recommendation in the box.
317    pos = recList.GetHeadPosition();
318    while(pos)
319    {              RecList r = recList.GetNext(pos);
320                   rec += r.string;
321                   if(pos && ("\n" != rec.Right(1))) rec += " ";
322    }
323    m_edit = rec;
324    UpdateData(false);
325    // Reset the display
326    display.Invalidate( );
327    }
328 END
```